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TREATMENT OF ECLAMPSIA.*

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The few clinical notes which I have to present for your discussion this evening can hardly be dignified by the title of a paper; furthermore, my statements must be largely dogmatic, as the conclusions are drawn entirely from a personal experience in nine cases of eclampsia.

Vinay, in referring to the pathogeny of eclampsia, states that the ætiological problem does not lie in the more or less normal condition of the urine, in the presence or absence of albuminuria, nor even in the integrity or alteration of the kidney, but in internal intoxication and the sufficiency or insufficiency of the emunctories. My own observations lead me to agree with Vinay's statement, for many women have these attacks with no albumin in the urine, while others with a marked albuminuria have passed through an uneventful pregnancy. In my experience a diminution in the amount of urea eliminated has borne a more constant relation to the occurrence of the convulsion than the presence of albuminuria.

Davis emphasizes the fact that eclampsia is the result of toxæmia produced by failure of excretion not only of the kidneys, but also of the liver, skin, lungs, and intestines. Whether this material retained is urea, creatin, creatinin, bacteria, or their ptomaines, acting singly or combined, has not been accurately determined. He also draws particular attention to the relation between constipation and toxæmia.

Other observers, as Rapin and Monnier, claim to have isolated a special bacillus, which when inoculated into animals causes symptoms similar to those of eclampsia. Cerdes insists that the eclamptic bacillus is the only cause, since it is not found in other diseases, and since the convulsion does not occur without it.

While there is such a wide difference of opinion as to the origin of the puerperal convulsion and the exact relation which a pregnancy nephritis bears to it, two important facts must not be lost sight of—

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i. e., that the eclamptic attacks are due to a toxæmia the nature of which is not known; secondly, that the ultimate cause of the trouble is the child *in utero*. The treatment naturally divides itself into the prophylactic and the management of the attack, which latter, because of the time of occurrence, will differ as to whether the convulsion appears during pregnancy, labor, or childbed.

Admitting that the convulsion is generally coincident with a pregnancy nephritis of greater or less severity—as was so in eight of the cases making the basis of this paper—and, further, granting that a nephritis during pregnancy once established, the kidneys never regain their normal condition while the gestation continues, as the extra tax upon the already crippled kidney increases as pregnancy advances, hence the woman is ever open to the possibility of a sudden explosion of uræmic symptoms. After delivery, on the other hand, the renal symptoms subside and prompt recovery is the rule; therefore, in the presence of expected eclampsia, two indications are paramount. The first is to cause prompt, thorough, copious elimination by every means possible—*i. e.*, purgation, diaphoresis, and diuresis. This last is accomplished by the employment of copious normal saline infusions.

The second indication is the rapid and immediate termination of pregnancy; this is especially urgent in the last month of gestation, when the child has little to gain and the mother frequently much to lose by delay. In looking over my histories I find twelve cases (not included in this paper) in which a nephritis of greater or less severity complicated the pregnancy. In seven labor was induced between the fifth and eighth months; the other five went to term and were delivered without accident, the child being dead in three instances and nephritic infarcts found in the placenta. These gestations were permitted to continue, owing to the improved urinary condition following the copious exhibition of water and the employment of tonics, baths, and a restricted diet, or the patient refused to consent to any interference whatsoever.

With increased experience in this dreaded accident, the necessity for repeated chemical and microscopic examinations of the urine during the latter months becomes more apparent; the quantity passed in twenty-four hours and the amount of urea eliminated should be a matter of special inquiry.

(Sufficient importance has not been attached to the total amount of solids eliminated.)

In the prophylaxis we may secure elimination through any or all of the emunctories; the activity of the skin is obtained by wearing

warm flannels and the employment of daily hot baths. The patient being placed in a full bath of 80° F., the temperature is then gradually raised to the highest point of tolerance, and hot drinks are administered, after which she is wrapped in a blanket, placed in bed, and the sweating continued; the patient must be carefully guarded from exposure.

The relation of constipation to toxæmia is so intimate that too much care can not be employed in emptying the intestinal tract. The bowels should be moved each day by colocynth, senna, or licorice, with occasional doses of calomel, which performs the double function of catharsis and diuresis. Although salines have been very generally condemned, I believe that a well-diluted drachm of Rochelle or Carlsbad salts taken each morning upon an empty stomach will prove of benefit to the patient. Diuretics which act upon the renal cells, thereby increasing the work put upon the tubules, have been utter failures in my hands. Pure water, or water containing lithia, accomplishes more with the patient, who should be directed to drink two or three quarts daily, and kept on a diet restricted to milk, eggs, and a small quantity of the white meat of fowl. From two to four quarts of a normal saline solution injected into the colon daily has markedly increased the amount of water passed in twenty-four hours. By this forced ingestion of pure water diuresis is obtained by a process of filtration in the glomeruli without putting extra work upon a diseased organ.

Veratrum viride in small doses is useful as a prophylactic when the pulse is full, hard, and rapid, as is often the condition preceding eclampsia.

Now be it understood that while dietetic, diaphoretic, and cathartic measures are of great value as temporary expedients, they do not cure a pregnancy nephritis once established while the foetus is *in utero*.

A brief analysis of my cases may serve to illustrate the necessity for radical treatment. Of the nine cases referred to, eight were primiparæ between the ages of twenty-five and forty-one; in six labor had begun before the convulsion appeared; the number of convulsions varied from three to twelve. *Accouchement forcé* with manual dilatation was employed seven times; Dührssen's deep cervical incision once.

Three children were born dead, and seven women made uninterrupted recoveries after delivery.

Two patients died, one being an ambulance case, admitted to the

hospital in coma with an arm and cord presenting, after unsuccessful treatment by a midwife for twenty hours; she subsequently died of sepsis on the fifth day. In the other instance an expectant plan was followed, using a bougie, with bromides, chloral, and veratrum. The patient died in the eleventh convulsion. In no instance did the convulsive seizures continue after the evacuation of the uterine contents. From the foregoing facts it would seem that the expectant plan of management should be relegated to the past—to be spoken of only as a matter of avoidance in practice. As my experience differs in nowise from that of other observers, it may be well to formulate certain indications for induction, and briefly to detail the most surgical methods.

Before Viability.—A pregnancy nephritis progressing unfavorably under proper diaphoretic, cathartic, and dietetic measures is a positive indication for the induction of abortion. Persistent frontal headache, nausea, epigastric pain, general œdema, diminution in the amount of urea, and of the quantity of water passed in twenty-four hours, together with partial or complete amaurosis and an albuminuric retinitis, are among the chief symptoms to be watched.

After Viability.—With the existence of a nephritis of pregnancy, each day's delay subjects the woman to an increased danger of eclampsia, while the child, as I have already stated, has little or nothing to gain by waiting. Hence premature labor is indicated.

In the presence of the convulsion, we are all agreed that immediate delivery is the one thing necessary, but we differ as to the methods of obtaining this end.

When operative procedure is decided upon, the period of gestation determines the method of operation. In the early months, after proper counsel, the patient should be placed in the Sims position, the vulva and vagina thoroughly scrubbed, then irrigated with an antiseptic solution, after which the anterior lip of the cervix is firmly grasped with a tenaculum forceps and the cervical canal cauterized with strong tincture of iodine, and then the canal is carefully, slowly, and symmetrically dilated to a diameter of an inch or an inch and a half. A Goodell-Ellinger dilator is best for this purpose. When the os has been thoroughly stretched, the finger is introduced into the uterus and the membranes are peeled up as high as can be reached. The lower segment and cervical canal is now firmly packed with iodoform gauze (strip gauze two and a half inches wide by five feet long is preferable for packing), the fornices are filled, and finally a vaginal plug inserted.

This tamponade is removed in from ten to twelve hours, when usually the ovum will be found separated and in the vagina. Should the delivery not have taken place, the dilatation will be sufficient to deliver manually. In the latter months induction by the bougie is the safest and most reliable method ; an aseptic technique is absolutely imperative to success. To induce labor by the intra-uterine injection of sterilized glycerin, as has been recommended by Pelzer and Edgar and practiced by the writer, is but to subject the patient to added dangers. This method should never be employed with an existing nephritis.

In the presence of the convulsion nothing but the most radical treatment will save the life of the patient—*i. e.*, *accouchement forcé* either following manual dilatation or the deep cervical incision of Duhrssen. When either of these rapid methods is employed, the patient is necessarily subjected to increased danger from shock and sepsis. The convulsions may recur in such rapid succession, the intervals so brief, that the patient passes directly from coma to convulsion, without even a moment of partial consciousness intervening. The coma deepens with each succeeding convulsion, and death may occur at any moment from asphyxia. There is intense cerebral congestion from arrested respiration and pressure on the jugular veins. An increase in the body temperature is a constant characteristic of eclampsia and influences the prognosis adversely. Hence our first effort is to control the convulsion by the administration of chloroform or morphine and the use of veratrum viride hypodermically in an initial dose of fifteen drops of the fluid extract, thus reducing the pulse-rate and blood tension, with consequent diaphoresis.

With the pulse reduced and held between sixty and seventy, a convulsion is not likely to occur, and evacuation of the uterus may be immediately proceeded with. In employing manual dilatation, the patient is chloroformed and placed in the lithotomy position across the bed (or, better, on a table). The vulva and vagina are then thoroughly scrubbed and disinfected, after which the whole aseptic hand is passed into the vagina and one or two fingers through the cervix, carefully and slowly dilating it until three fingers are admitted, and so on, until the coned hand can be introduced into the os. At this point in the operation, unless great care be taken, deep lacerations are apt to occur, occasionally producing serious hæmorrhage. From twenty minutes to an hour should be spent in this dilatation. When the canalization is complete, delivery may be accomplished by either forceps or version ; the latter is preferable in all cases when the head

has not firmly engaged. Rapid dilatation in one of my cases was obtained by deep cervical incisions, as suggested and practiced by Duhrssen.

The incision is made with the knife or scissors, the preference being given to the latter. These artificial lacerations extend to the utero-vaginal junction, and are made to the right and left of the median line, both anteriorly and posteriorly; in this way the bladder, rectum, and deep tears into the broad ligaments are avoided. The portio vaginalis must be effaced before resorting to this method. These tears need not be repaired unless the patient's condition justifies the extra time and shock necessitated. An intra-uterine and vaginal tampon of iodoform gauze may be needed to control the hæmorrhage subsequent to delivery.

An intra-uterine douche should be given after employing either of the above methods.

Even after the uterus is empty and the convulsions have ceased, suppression of urine may persist, and our patient dies of uræmia. It is to this class of cases to which I desire to direct your attention.

The activity of the skin may be preserved by hot baths, as already described, veratrum continued in five-drop doses for its diaphoretic and diuretic effect, and active catharsis established with elaterium or croton oil.

The ordinary diuretics, as the potassium salts, digitalis, diuretin, etc., are practically worthless to increase the amount of water passed in such an emergency, and do harm by stimulating the renal cells, or by increasing the blood pressure in the diseased organ. The forced ingestion of pure water—employing a normal salt solution of 100° F., which is thrown into the colon through a fountain syringe at slight elevation, the patient lying on the left side with the hips slightly elevated—will rapidly increase the urinary secretion. These injections of sterilized water may, also, be made directly into the circulation, as suggested by Dawbarn in acute anæmia.

By way of recapitulation I present for your discussion the following conclusions:

1. That eclampsia is due to a toxæmia in which the entire excretory system plays a part.
2. That constipation bears an intimate relation to this toxæmia.
3. That a pregnancy nephritis is frequently coincident with the occurrence of convulsions, and that an albuminuria is of much less importance than a diminution in urea and total solids eliminated, or a decrease in the amount of water passed in twenty-four hours.

And, finally, that while diaphoretic, cathartic, and dietetic measures often improve a nephritis of pregnancy, the woman is never safe with the foetus *in utero* ; therefore the gestation should be terminated in the most surgical manner.

